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THE
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☞See advertisement on last page.

Poetry.

SPEAK NIAGARA.

BY J. H. DODGE.

Speak Niagara,
And tell the date of thy mysterious birth—
Art thou coeval with our mother earth,
And, has each new-born year that's past and gone,
Listen'd with awe to thy tremendous song,
Since first the sun his boundless light reveal'd
Or earth within her lengthened orbit wheel'd.

Speak Niagara,
And tell the wary atheist of a God,
That waked thee from oblivion with a nod,
And raised from earth on high, thy chast'ning rod,
To crush the impious wretch that mortals laud
Who dares with sophistry and art proclaim,
"Idle chance," gave birth to all that beings name.

Speak Niagara,
And let the hoarse anthem of thy wrath be heard,
While thou dost thunder forth the Almighty's word.
Those, whose impious tongues his name deride
And bid them in earth's dreary caverns hide,
Nor dare again, their treason to unfold,
Gainst him from whose embrace creation rolled.

Speak Niagara,
Uplift thy own sublime and awful voice,
Bidding the glorious light of truth rejoice,
Till error's dark, relentless chains are broke,
And god-like reason from her trance is woke,
To bind no more with fetters fast and strong,
Immortal spirits to atheistic wrong.

A LOVER'S LOGIC.

BY CHARLES MACKAY.

I am skill'd in magic lord,
And can tell thee, dearest maiden,
What the winds at evening say,
As amid the boughs they play;—
What the river to its shore,
Softly whispers evermore
From its heart o'erladen.

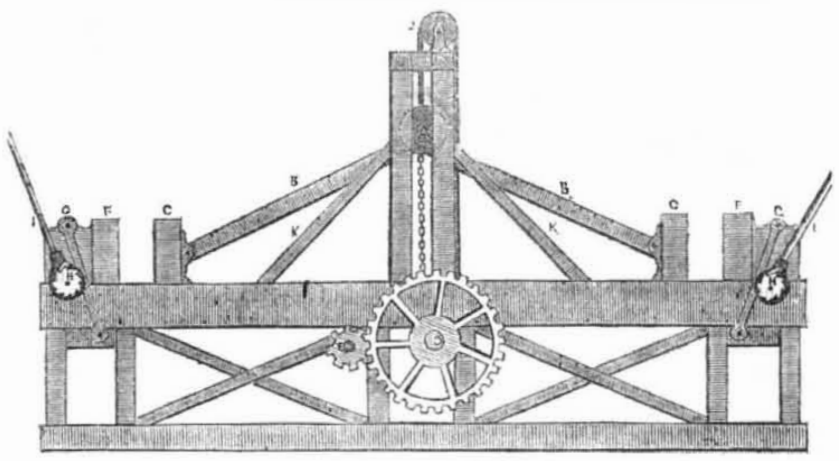
I can tell thee how the moon
Breathes persuasion to the billows:
What discourse the mountain makes
To its shadow-loving lakes;
And concealed in lonely nooks,
What the little devious brooks
Murmur to the willows.

"Love thou me—for I love thee,"
Is the song they sing forever.
At this moment I can hear
The responses ringing clear:
And the very stars repeat
To the moon an answer sweet.
"Love shall perish never."

And if thus Earth, Sea, and Sky
Find a voice to sing their passion,
Should we fail my dearest maid,
Wandering in this greenwood shade,
To repeat the same sweet song.
We should do their music wrong,
And be out of fashion.

The wings of a locomotive are said to be the very best flight of fancy.

LAMB'S PATENT JOINT LEVER PRESS.



We have here one of the most ingenious yet simple inventions for deriving an enormous pressure from a small power which has ever been brought before the public. We look upon it with admiration when we come to think of the immense benefits which must result from its use when fully introduced as an assistant in that great branch of American produce, the Cotton trade. In New Orleans alone, over one million bales are annually sent away in ships, and it is of the utmost importance that the cotton should be compressed into as small a space as possible. An incredible amount of money and ingenuity have been expended for the erection of Cotton Presses; nearly all of them are operated on the screw or hy haulic principle, but the original cost, cost of repairs and time required for operation, compared with the superior advantages over them of Mr. Lamb's invention, makes it apparent that the above Press must shortly take the place of all others in use. Aside from Cotton, it is also admirably adapted for expressing Linseed, and producing all other kinds of vegetable oils, also Sterine, Sperm, &c. &c. Indeed for any business where immense pressure is required it may be used with great advantage.

In the above engraving, A represents the joints of the two levers B B; these levers it will be seen, are attached by pinions to the blocks C C, called followers. The power being applied to the small wheel E, puts in operation the large wheel D, on the drum of which one end of the chains are attached, the other ends being fastened at A, where the levers join. The wheels being put in operation the chains are drawn down, thus spreading the levers and pushing the two followers C C, with tremendous force against the two head blocks F F. The cotton, or whatever article to be pressed, is placed as will readily be seen, between the followers C C, and the head blocks F F. Above the joint of the levers will be seen attached a rope J, passing over a small friction roller down to the drum of the large wheel D, and fastened on the side opposite the chains. As soon as the desired pressure has been given to an object, the motion of the wheels is reversed, causing the chains to be unwound, while the rope, being by the same movement wound up, draws with it the two levers B B, and brings back to their places the two followers C C. The pressed bales are now removed, others inserted, and the operation goes on as before. G G, are braces with palls at the tops, which hold the head blocks F F I I, are two levers which operating on the ratchet wheels of two inside rollers, serve the purpose of instantly moving the head blocks F F back or forward, as desired. This is also an admirable part of the invention, for the superintendant is thus enabled at pleasuse, by merely moving either or both of the levers I I, to increase the pressure on both bales equally, to increase one or diminish the other, or to give an *equal pressure* to two bales of *unequal sizes*. K K, are two braces supporting the uprights.

Among the advantages which this Press has over others, are these —The whole power applied is expended on the bales or articles to be pressed, for it requires no more power to press two bales than one The power is always expended on the ends of the long levers, and not on the cogs and screws. as in other presses; hence the wearing out and liability to derangement, is wholly prevented.—By simply moving the lever I, the Press is accommodated to any sized bale, two of unequal sizes being pressed with the same equality and facility. The cost of constructing this Press is hardly one-half that of the common screw or hydraulic machines. A ten horse power engine is sufficient to work two Presses of this kind, each exerting 500 tons pressure, and in pressing cotton, the time required is half a minute to each bale. They can easily turn out 1000 bales per day. The power of the Press is by no means limited, varying only with the strength of construction. A pressure of 5000 tons can as easily be gained as 500. Several of these Presses have been constructed in this city by Stillman & Co. of the Novelty Works, also by Steele & Co., and found to operate beautifully. Two distinct patents were granted on the machine, and the inventor having completed arrangements is now ready to supply any demand. All orders may be left at the Office of the "*Scientific American*," where any further information relative to the invention may be obtained. Letters should be post paid.

Maryland Mechanics Institute.

The Maryland Institute for the promotion of Science and Arts, has at last fully organized and has secured the upper story of the Post Office building, as a lecture room. They are also making arrangements, to hold a fair for the exhibition of the products of the genius and skill of their mechanics and manufacturers.

An ice boat run a mile in one minute and twelve seconds at Albany, on the 3d inst.

The Wondrous Virtue of Silence.

Deep and powerful souls adjust everything in silence, and make no noise with their doings or with themselves. They go on their way like the works of God.. In deep silence the sun ascends the heavens; silently sinks the night down upon the earth. What prepares itself in greater stillness than the reawakening of Nature, and what is more glorious than the opening of Spring?

A line of telegraph has been put up between Lima and Callao, in Peru.

RAIL ROAD NEWS.

Locomotives.

Some locomotives are being used in England on the broad guages, weighing all of thirty tons, and are used where heavy trains of cars required being drawn over roads. The important features in railway Engines are the modes of connecting the piston rod to the crank on the wheels. Where great speed is required they are generally only attached to one pair of wheels; the other wheels acting only as running wheels to the locomotive, but having no friction upon the rails. The friction upon the rails is about 1-6th to 1-10th the weight of the car, and on a level road will draw about 35 or 40 times the weight of the car. but of course will decrease upon an ascending grade, just in proportion as gravitation in the cars gives additional weight to them while ascending the grade.

The speed also of a locomotive depends much upon the weight carried. Suppose it requires the weight of one ton to draw a train 40 miles in 4 hours, then the speed is 10 miles per hour, and the amount of power developed may be set down as 40, that is the weight by the distance—but the time which we have to develope this power is four hours. Now, if it is required to take the same train 40 miles in one hour, then it is evident that 4 times as much power is required, theoretically, but as an increased resistance of the atmosphere is exerted on the train at the higher speed of about 16, that is, as the square of the increased speed, it is evident that a much greater amount of power is required to run trains at a high speed than at a low speed.

The Illinois Central Railroad.

Petitions are now circulating in Illinois for the General Governmentto assist her in completing the Central Railroad, which is designed to run through that State to the delta formed by the confluence of the Ohio and Mississippi rivers. The State of Illinois has already expended on the project one milllion and sixteen thousand dollars.

There is now before the Legislature of Massachusetts sixty three petitions for new railroads, branches of railroads, &c., together with the numerous petitions in aid of the several projects, also remonstrances against the same.

The labors of the Committee on Railroads must be extremely arduous.

Mr. F. P. Holcombe, a civil engineer at the South predicts "that the mighty Mississippi for all purposes of travel, will be deserted. We have but to compare New Orleans to show the probability of this event. From New Orleans to Louisville, by water, is 1,400 miles—by land 600 miles." The Railroad Journal is of the opinion that the prediction of Mr. Holcombe will be verified at no distant day.

The "right" of Massachusetts to subscribe to the new stock of the Western Railroad was sold on Monday week, the Worcester Telegraph says, for $3000.

Bridge Roofs.

The flooring of railway and all other bridges should never be laid down until a strata of cement was laid underneath and then dried. Uncouth and expensive coverings for wooden bridges might be entirely dispensed with by a plentiful use of pitch and tar. We know one wooden bridge without any cover that is now hirty years old and is nearly as good as ever. The wagon tracks of it are flat and broad iron rails, it is all well pitched between the planking, every bolt was tarred before driven in, and it looks as if it would stand the floods and storms of hundreds of years yet.

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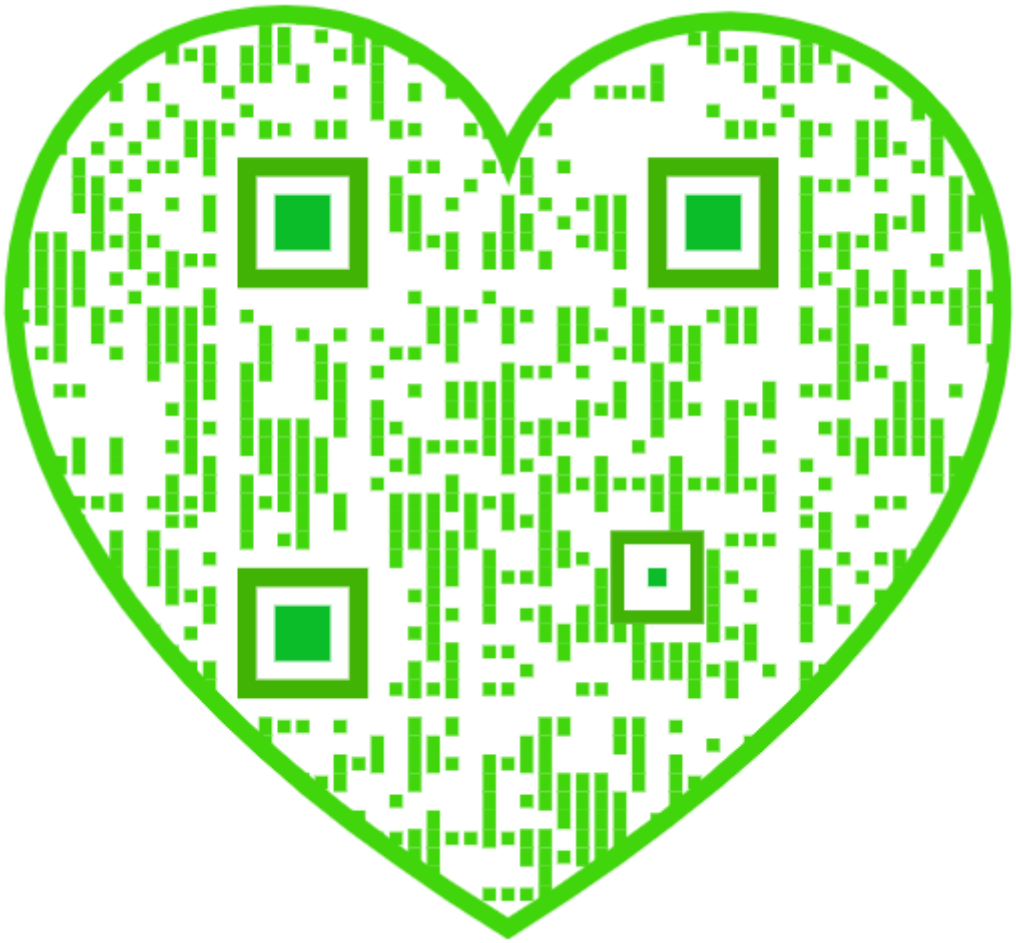

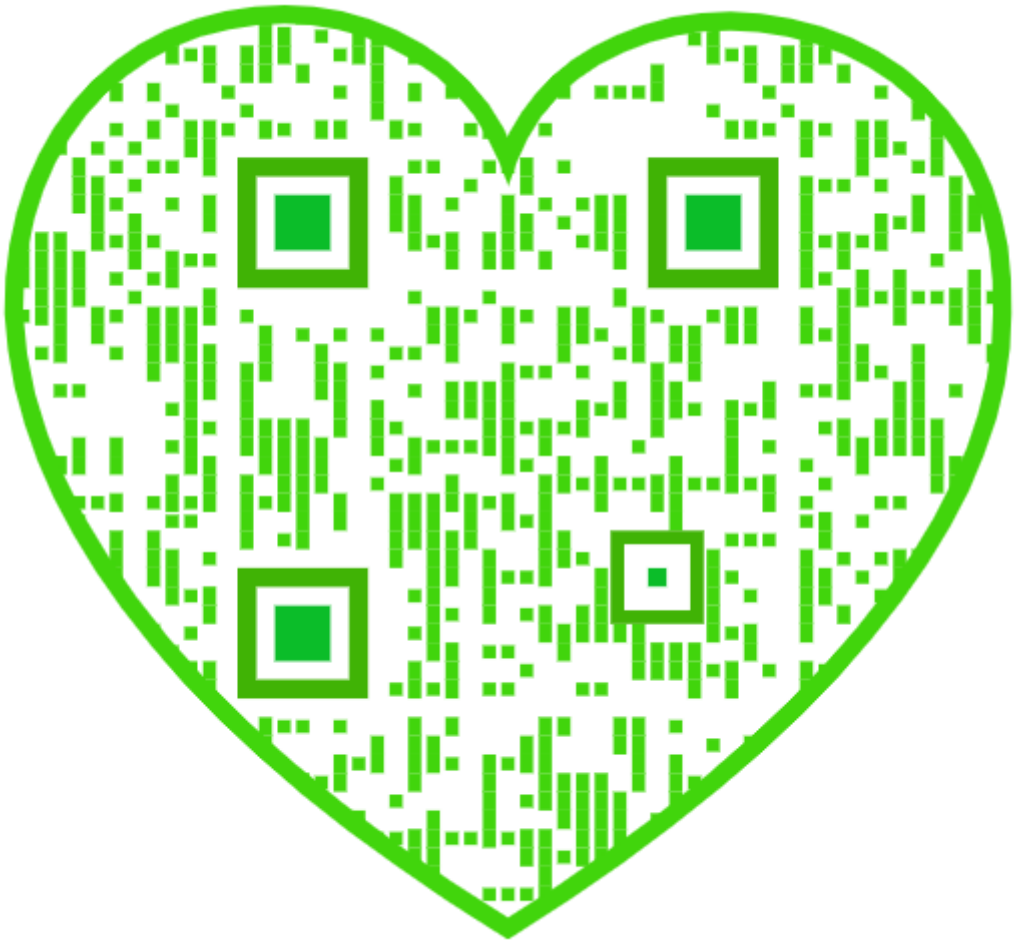

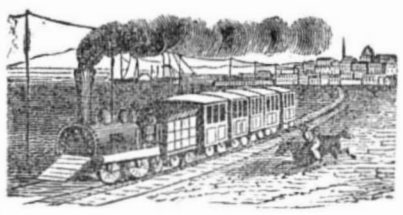

Foreign Correspondence.

GLASGOW, Feb. 12, 1848.

Dear Sci.—I embrace the opportunity of sending you a few scraps of a general description with the Britannia, which sails for your port in a day or two. I am sorry to say that there is little prospect of an improvement in our commercial affairs, but indications, deep and foreboding that the depressed condition of affairs has not yet reached its crisis.. The late venerable divine of Morningside, (Dr. Chalmers,) once truly said : " Enterprise alone, is not the soul of a nation's commercial prosperity, but on the opposite, an over-reaching, an extending beyond the limit of the New Testament rule, is sure to bring matters into anarchy and drive the operative to want and destitution." In some good measure this sage reasoning can account for the present distressed condition of the working classes. In England things are assuming a more favorable aspect—at Ashton nearly all the mills are running full time, while many others are working half time. Besides mills stopped in Lancashire, there are an immense number of machine shops shut up. In Scotland the Bankrupt list is still on the increase. Some of our most public and long established factories have failed, among them I may mention Mc Phails, of Greenhead. Calico printing is at a very low point. Our streets exhibit masses of working men all out of employment. A society has lately been formed in this city, the object of which is to form a Scottish Union of Literary and Mechanics Institutions. The typhus fever has considerably abated during the last two weeks. Much excitement exists in the minds of the people regarding the progressive advance of the great scourge and destroyer, the cholera. There are soup kitchens in many of the towns and villages in the West of Scotland, supplying the poor and unemployed. A paragraph has went the round of the papers, relative to a phenomenon having lately been seen in the Moon—the article is entitled " Volcano in the Moon," A bright spot was seen about one quarter the size of Saturn, became visible, and varied in intensity as an intermitting light resembling flashes from Etna, with the flowing out of the volcanic lava. The old Duke, (the "Rough and Ready" of Waterloo,) is anxious to have old England better fenced in and says it is necessary to have our garrison 65,000 men strong. If he would live a little more economical, and get sinecure pensions abolished, he would confer a greater blessing on his country Your papers are regularly received, extracts from which, often appear in our papers, which I take to be your Exchanges. A melancholy accident occurred on New Year's day at the Busby Cotton Mills ; the proprietor taking advantage of the holiday, three men were repairing the cistern connected with the gasometer. On one of the men approaching the receiver where the gas is contained, he stooped down with a lighted candle in his hand to examine some bolt hole ; the fluid became ignited, and the result was, the whole went off with a terrific explosion, two men were killed and the third is still in a dangerous condition. Capt. Ryrie is here getting the American ready for New York, by which I shall send more scientific news than there is contained in this Epistle. Yours, &c.

GLENBURN.

Honor to the Mighty Dead.

A great procession in respect to the memory of the departed Sage and Statesman, John Quincy Adams, marched through our streets on Wednesday, accompanying his remains while passing through this city on their way to Boston. The procession was one of the grandest ever seen in this city and forcibly proclaimed the unchanging truth that the actions of men are immortal, and though their mortal lives are as the grass, " he being dead yet speaketh." The Hon. Henry Clay united in the funeral demonstration.

First Paper Mill in Havana.

Some two years ago, Senor Don Mesty, of Havana, obtained from the authorities of that Island, the sole privilege to build and to run for a number of years a paper Mill. For the building of the machinery of this Mill, proposels were received from England, Scotland, France, and this country. The successful competitors were all of New England, viz., Willis G. Eaton of Newton, Lower Falls, and Smith and Winchester of Ct., for the general machinery, and Howe and Goddard of Worcester for the Foundrinier Machines. The machinery was built and shipped over a year ago Amos Stevens of Newton accompanied it, to set up the machinery, and G. B. Curtis, as superintendant of the Mill. Some eight or ten others, Yankees, were engaged as operatives.

Before operations a priest was sent to the mill with a basin of holy water, with which everything was plentifully besprinkled It was an epoch celebrated by its inhabitants with public rejoicing.

Another mill is soon to be erected there by the same person. It goes by water power, and the gates, sluices, &c., are of mahogany.

Coal Trade.

The average freight of coal from Philadelphia to Boston in 1847, was $2,75 per ton. In 1848 it will be $1,75, making a difference in favor of the buyer of one dollar per ton. Besides the inland freight to Philadelphia, will be reduced perhaps an average of 25 cts. or more, and some reduction must be expected in our rates here. Altogether we expect to put coal into Boston, at not far from $5 per ton of 2,240 pounds, for the opening; and we trust our eastern friends with that assurance, will not have to look abroad for supplies.

Solar Light.

The whole establishment of the New York Sun is splendidly illuminated with gas made on the premises, from the refuse oil of the presses, engine and other kinds of grease. The apparatus is portable, invented and applied by Mr. E. S. Riggs of West Street Foundry, N. Y

New Movement.

A tract of land containing something like a thousand acres, hitherto entirely unimproved South of Hicksville, Long Island, has been purchased for a company of Germans, who are to take possession in the spring. As the land has not been tilled within the memory of man, its cultivation will be so much clear gain to the community, who will also gain by the addition of a body of honest and industrious Germans to their number. We suggest that there is a great quantity of land on Long Island which might advantageously be employed in the same way.

Gun Trumpet.

Sometime ago the Albion of St. Johns, N. B., gave an accouut of an invention of Mr. R. Wallace of that city, for a sea signal. It was a brass trumpet about five feet long, with a bell mouth, the latter two feet in diameter. The instrument was fitted tightly on the end of a loaded musket, on the discharge of which a very loud noise was produced, similar to that resulting from a cannon of large calibre.

A gentleman from that place has since informed us that the invention is of real utility.

Steam Washing Establishment.

A new three story wooden building is going up in South Water Street, Chicago, where washing is to be done by steam on a large scale. The more special design is, to do the washing for the steamboats and other crafts coming into that port, though it will be sufficiently large to do considerably more.

The Very Last.

A Miss Gilmore somewhere down east, was courted by a man whose name was Haddock, who told her he only wanted one *gill more* to make him a perfect fish.

The National Medical Association to be held at Baltimore in 1848, desires all physicians to send in the results of their experiments with Chloroform, that concurrent testimony may be elicited regarding its good, or injurious effects. Address Harvey Lindsley, M. D., Washington.

Value of a Dollar.

If you would learn the value of a dollar, go and labor two days in the burning hot sun, as a hod carrier. This is an excellent idea, and if any of our young gentlemen had to earn their dollars in this way, how much less dissipation and crime would we witness every day. So of our fashionable young ladies : if they like some of the poor seamstresses of our large cities had to earn their dollars for making shirts at ten cents a piece, how much more truthful notions would they have of their duties of life, and their obligations to the rest of the world.

Worcester Manufactures.

T. K. Earl, and Co., have an extensive establishment in Worcester, Mass., for manufacturing card clothing by machinery. An order has been received from the Bay State Company, of Lawrence, to the amount of twenty-five thousand dollars. In this establishment about eight hundred pounds of wire and one hundred and twenty-five sides of leather, are used weekly, giving employment to ten workmen. The wire used is manufactured mostly in Worcester, and the leather is tanned in that vicinity The clothing varies from sixty to eighty-five thousands of points to a square foot.

New Worcester.

In New Worcester, Mass., in one establishment, twelve hundred of Coe's patent screw-wrenches are manufactured monthly. If this were not a great country, full of active men who love conveniences withal, it would puzzle a Yankee to guess where a market for so many would be found; and it is equally difficult to fancy any thing more compact, simple and perfect, of the kind, than those same screw-wrenches, patented by Mr. Coe.

There is something in the very name of Worcester that associates itself with mechanical ingenuity.

Raising the Wind.

The best specimen of effecting this desirable object that we have heard of lately, was the case of an officer in India, who, finding the governor deaf to all applications, persuaded a comrade to write to the old gentleman, imforming him that his son was dead, and 100 pounds wanted for funeral expenses. The money was sent and duly acknowledged by the son.

Rare Dish.

At an evening party given at Batavia, in Gennesse, Co. N. Y., on the 22nd ult., by the Hon, G. W. Lay, one dish graced the table, which was presented to Mr. Lay, by Sir John Ross, the great navigator. The dish was mutton, it had made a great number of voyages, and was thirty-six years old, yet it was so well preserved that it retained all its nutritious qualities.

Explosion.

A steam boiler in the foundry of Cyphus & Duval, in Charlton st., this city, burst last Monday, forcing a large hole through the brick wall of the building, and throwing a volley of missiles into an adjoining house. This is the same foundry at which the terrific explosion of an old bombshell killed several persons some five years ago.

Ewbank's Hydraulics.

Part 5 of this valuable and standard work has just been issued by Greely and McElrath, Tribune Buildings. Like its predecessors, it is equally interesting and instructive. It is principally devoted to descriptions of Fire Engines and Hydraulic Rams and therefore it should engage the attention of a great number of our citizens. It is only 25 cents per number and the mechanical engravings in each number are worth the money. Orders received at this office.

Tinned Lead and Iron Pipes.

Some time ago we received two communications relative to the price of tinned lead and iron pipes. We have waited to give an answer, as the patentee was engaged in a law suit—and have now to say that not an inch of it is at present manufactured in this city.

Most of the operatives at Fall River, who " struck" against a reduction of their wages, few weeks ago, have gone to work again, and most of the mills are now full operation.

The Origin of the Name Ohio.

A writer in the American Review, says, " The Genessee trail, which we have been tracing, was one of the routes to the O-hee-yo, or Alleghany river, for those who sought to descend that stream towards the Southwest. O-hee-yo, the radix of the present word Ohio, signifies by way of eminence, the Beautiful River; and the Iroquois, by conferring it upon the Alleghany, or head branch of the Ohio have not only fixed a name upon one of the great rivers of the continent, but indirectly upon one of the noblest States of our confederacy.

Yankees in Russia.

The Ameriean firm of Harrison, Winans, & Eastwick, the well-known contractors for the cars and locomotives on the St. Petersburgh and Moscow Railway, have obtained the contract for the new iron bridge across the Neva. Mr. Winans, of this firm, is now in Baltimore on a visit, but will shortly return to Russia to fulfil his contracts with that government.

Henry Clay.

The Hon. Henry Clay arrived in this city on Tuesday last, and was received with great honors.

Cotton Duck is manufactured at three factories near Baltimore. The American of that city states that last year they used of raw cotton to the value of 246,659 dollars, and paid 90,102 dollars in wages, and manufactured over two millions yards of Duck. Formerly the cash went to Russia, from which our shipping was employed.

A new Paper mill is about being started in Milwaukee, Wisconsin. This will prove a great convenience to the territorial press, which has for years been subject to the uncertainty of obtaining supplies. and the certainty of being fleeced on what was obtained.

He that mindeth his own business is wise, but he that interfereth in the businees of others from crafty motives, is sure to meet the end of the Fox that endeavored to rob the open rock muscle, which closed upon his paw and held poor Reynard fast to the rock till he perished.

It may be said generally of husbands, as the woman said of hers who had abused her, to an old maid who reproached he for being such a fool as to marry him—" to be sure he is not so good a husband as he should be, but he's a powerful site better than none."

The Wheeling Times, says the bridge over the Ohio at that place is rapidly progressing, and gives evidence of the structure being one which will last as long as the earth itself.

A writer in the St. Louis Republican states that the tobacco crop of Missouri, now coming into market, is the best for manufacturing purposes that ever was produced in that State.

The umbrella is a mark of authority among many Eastern nations. The King of Ava ranks among his other high sounding titles, that of " Lord of Twenty-four Umbrellas."

A writer who professes to be a great admirer of antiquity, exclaims, " where do you meet with any modern buildings that have lasted so long as those of the ancients."

The Bill entitled " An act to limit the hours of labor, and to limit the employment of children in factories under twelve years of age," passed the Senate of Pennsylvania, on Wednesday last.

Women, it is said, have more strength in their looks, than we have in our laws, and more power in their tears than we have in our arguments.

A correspondent of the Exeter News Letter states that the whole of the town of Plaistow is to be used up into bricks, and transported to the city of Lawrence.

McCready's cotton mill at Morristown, Pa. has temporarily stopped on account of disagreement with the hands.

The Montour Iron Works of Pennsylvania have stopped payment.

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For the Scientific American.

Carpeting.

The progress of almost any of the arts may be safely taken as an index of civilization. The arts, indeed, are so intimately interwoven, that one of them can scarcely flourish without giving rise to and receiving support from others. This is particularly the case in regard to the manufacture of carpets: which, like other branches of weaving, has received improvements at every hand, and has lately made important advances. The very fact of the existence of such a manufacture speaks volumes as to the increase of our domestic comforts.

In the superficial texture of the common carpet, nothing appears to distinnish it from an ordinary web; and a first observer is at a loss to imagine by what means its variety of colors can be produced On examining the figure more narrowly, it appears that the designer has labored under considerable difficulties: for, in many places where purity of color would have been advantageous, a mixed color of the warp and weft, only is to be found, while scarcely any gradual shading of the tints depending on the nature of the figure is to be seen. A still closer examination explains at once the source of these imperfections. The ingrain or double carpet is found to consist of two contiguous webs, intermingled with each other so as to produce the pattern; each of these webs, if woven singly, would have a striped appearance, being partly colored in the weft. One set of colored stripes is thus imposed upon another; and in designing the colors of the pattern, no selection beyond what is afforded by the judicious arrangement of these stripes can be made. The number of full colors is thus very limited and these can only be obtained where weft traverses warp of the same color. To bring up then a part of the figure full red, *red warp* must be traversed by *red weft*: these colors can be immediately concealed by sending the threads to the other web, but were they to remain long there, both webs would become monotonous. It is, therefore, extremely difficult to avoid a strong tendency to striping in the colors, and except in the principal part of the figure, the colors can hardly be well managed, the secondary embellishments being almost matters of chance. Yet, in the face of all these difficuities, patterns of great beauty are being continually formed on the carpet loom.

The invention of the *triple carpet*, invented by Thomas Morton, of Kilmarnock, Scotland, has removed these difficulties. This carpet is composed of three webs, which interchange their threads in order to produce the pattern. The primary object in the introduction of the third web, appears to have been the obtaining of greater variety and brilliancy of coloring; but another curious effect has followed, that the two sides of the carpet are necessarily counterparts to each other. To a certain extent the figure of the under must depend on that of the upper side, since threads may be needed from the *under* web to produce what is wanted in the chief pattern on the *upper* side, but there still remains the choice of an interchange of threads between the two inferior webs. It is obvious that the tendency to striping must be much less on this than on the common ingrain carpet, and that the designer having a far greater choice of colors may produce effects that could not before have been obtained. After the principal figure has been determined on, the skill of the designer is most severely exercised on the *wrong* side of the carpet. His choice of materials is indeed as great as with the common ingrain carpet, but then he is hampered by the restriction in figure, and can only be entirely at ease *opposite a piece of plain texture* on the other side. The superior beauty of the triple carpet over the common ingrain or two-ply carpet is at once acknowledged: It possesses almost all the freedom in coloring of the floor-cloth or paper-hanging while its great thickness and comparative cheapness bring it into competition with the more expensive kinds of carpeting.

The introducer of this textnre (Mr. Morton) has conferred on us a very great favor; he has furnished us with a higher embellishment for the interior of our dwellings. and presented to us another evidence of the active benevolence and social disposition of man. And it is agreeable to reflect, that in the nursing of the idea and the carrying of it into effect, he must have felt a pleasure much more intense than is likely to be experienced by any of the multitudes who will enjoy the fruits of his abilities. GILROY.

(*To be continued.*)

Spots in the Sun.

We find that these spots are not fixed, but are continually dashing along the centre of the sun. Now, when we come to the consideration of the spots themselves, we find them characterised by certain remarkable phenomena, which will enable us to ascertain their cause. A spot never appears twice in the same place: but although they are not confined to a point, they are confined to regions. They always appear in the Sun's torrid zone. We never find the spot breaking out beyond that belt. Then, again, on looking more minutely, we find the spots themselves have a motion—a motion besides that which the rotation of the Sun causes, and it is most peculiar. We find that the spots which appear North of the Sun's Equator, move slowly toward the North, till they get to the temperate regions and then disappear. No instance has been known of spots formed in the North going South. Just so, spots of the South move towards the South temperate zone and disappear.

There is still another circumstance characterizing the mode in which they disappear. Sometimes they go on to the Sun's temperate regions and then die away. At other times, they do not disappear in this manner, but split up just as if they were exploded by some violent force. This phenomena I had the good fortune once to witness. It is most remarkable. It has been compared to this:—Suppose a person to be standing on a frozen pond should take up a piece of ice and cast it from him. Now, this mass of ice would be broken into a vast number of fragments which would be scattered over the surface of the pond. This is exactly the manner in which these spots appear to be dashed and scattered over the surface of the Sun.

These spots are supposed to be hurricanes, or violent winds in the Sun's atmosphere. But can winds exist in the sun? What is the cause of winds is simply this: The atmosphere in different portions of our globe is unequally heated. If all parts were heated in the same degree, there would be no winds. One cause in the difference of heat on the Earth is the shining of the Sun. At the Torrid Zone his rays are vertical, or nearly so, which renders his heat intense, while at the North and South, his rays are very oblique; consequently, the degree of heat in those regions is much less than it is at the Torrid Zone. Now, it is impossible that this cause should operate to produce winds in the Sun. There is another important cause, however, of winds in the Earth which may exist in the Sun, viz; a difference in materials. This difference is such that if the rays of the sun should come down exactly the same on all parts of the Earth, the difference in the degrees of heat would be very great. Take, for instance, a case of the sun shining on sand and on the water. The sand on the margin of a river may be scorching hot, while the water is very cool. Now, where are the hot regions on the sun, and where are the cold? Where is the Continent? and where is the Ocean? Now, this inference is within the range of science. There is, however, a difficulty in carrying the explanation out. It is very probable that the phenomena of these hurricanes of ours are owing to the trade winds. Now we cannot determine trade-winds in the body of the Sun. The question with respect to these lies open for farther observation.

Here, then, is another field of most engrossing speculation. This even, that these surgings in the Solar atmosphere, are the keys by which future generations may unlock his character, shrouded though now he is in his noble and unpenetrable splendor. This is the wing on which Intellect may pass where vision never can, and explore the hidden Orb, his continents and oceans, his plains and majestic mountains And why incredible? Why should not Intellect pass as of yore, where the feeble eye can never reach. For note the history of this very discovery! Once an acorn, already it has become a young oak, with many branches, and nought shall hinder it to stretch yet farther toward the skies? When Galileo through his rude telescope first noted a few dark specks on the disc of the burning Sun, that Globe of fire, as people thought, men were all struck in amaze, and because of their amaze almost would have stoned him. Time rolled by, during which some thought that the spots were the ashes of the burned Sun; others that they were the dark souls of the punished floating in fire. A great man then analyzed the spots and determined their character. By degrees, and only by degrees, and by the efforts of separate thinkers, they have come to be considered as a class, and those laws sought to be discerned on which deeper questions certainly depend. Tell me not that thought shall stop or the Human Intellect here be stayed. The mighty avalanche grows among its native heights unseen by Man, silent and unknown for ages, but as its mass enlarges, though it be but by the fall of flake after flake of the downy snow the moment of its freedom is approaching—the moment when delivered from bondage by a stroke of sunlight, it shall thunder to the plain, and the mountains shall shake with the echoes of its powers.—*Professor Nichol.*

Artisans in Persia.

The King is considered to have a general right to the labor of artisans; but he does not commonly exercise the right, receiving instead a certain tax, the amount of which varies according to the man's income But it a man gets a reputation for any particular excellence or skill in any trade, the king, or the governor of the province where he resides, sends for him, and makes him work for the monarch and for the courtiers and great men, and he may think himself well off if he can get them to pay him even such miserable wages as may enable him just to keep from starving. This makes every man anxious to avoid the reputation of being an expert workman, or of having made improvements in his art. Mr. Fraser, in his "Narrative into a Journey into Khorassen," mentions a man who made some improvments in pottery, so far as to manufacture a sort of porcelain, resembling tolerable china ware. His fame quickly spread, and soon reached the court. When the king heard of it, he sent an order for the man to repair immediately to the capital, to make china for the Shah. The poor fellow, who knew the consequences, was terribly frightened at this order. He went however, but not to make china. He scraped together all the money he could, and sold every thing he had to raise a bribe for the prime minister, whom he entreated to tell the king that he was not the man who made the china; that the real potter had run away, nobody knew where, and that he himself had been put under restraint by mistake, and prayed to be released. The prime minister put the money in his pocket, and told the story to the king, who sent a release to the poor man, who joyfully returned home, vowing that he would never more make a bit of china, or make any kind of improvement as long as he lived.

[There are more than kings who consider that they have a general right to the labor of the mechanic, but the nation that would progress in science and art must encourage her mechanics and artisans. Wherever we find labor degraded—there do we find barbaric tyranny exalted

The Rich Man and Day Laborer.

A merchant who is avaricious as opulent has recently excited some public attention at London. He had obtained at the cheapest possible rate a poor day-laborer to do some work in his house. This unfortunate man, fatigued with work, represented to the merchants wife, that with so low wages he could not procure a glass of beer to quench his thirst. The compassionate woman gave him a tankard of ale, but the husband learned this circumstance on his return, and when he settled with the laborer, retained the value of the drink; the poor man exclaimed against it, and raised so great an uproar that the police took him to prison. The next day when he was called before the judge he explained the affair and was discharged on the payment of two shillings, but the merchant had another account to render to justice; he was condemned to pay fifty pounds sterling as a fine for having sold beer without a license, and the poor laborer, as the informer of the offence received a third of the sum.

Young Men should read Good Books.

We have never known a young man who was not fond of reading become either as intelligent or moral as those who with a fondness for reading chaste and useful works, indulged such a taste whenever opportunity offered.—We have always hopes of a young man when we see him purchasing books instead of cigars or tobacco. Mark such a young man and you will see him certainly become one who is looked up to when he becomes a man. Three cents spent every day for cigars, or other nonsense, if treasured up for books, will purchase eleven dollars worth of books in the course of a year, and just look at the difference of the application. Money spent for books, is like purchasing that kind of food which invigorates the soul and nourishes it for noble actions, while money spent in the ball room or theatre, or for the gratification of an evil physical taste, is like purchasing that which takes away the proper nourishment of the mind and certainly is injurious to the body. Young men should read good books.

Interesting Dutch Colony.

The Holland Immigrants recently settled in Iowa, have named their new settlement 'Pella' from Pella beyond Jordan, to which the early Christians fled upon the destruction of Jerusalem by the Romans. It is two or three months old, and numbers 800 inhabitants. Large numbers are to join them in the Spring when their Pella will suddenly become a populous prairie town. It is a singular sight, says a correspondent of the Christian Intelligencer, the velvet jackets and wooden shoes of these Puritans of the 19th century, in the midst of the prairies of the New Purchase, that stretch from the Des Moines to the Cheaque, in Central Iowa. They are living in camps covered with tent-cloth, or grass and bushes—the sides barricaded with all sorts of odd looking boxes and chests from the Netherlands. These people are respectable and intelligent. When they took the oath of allegiance to the United States, a few weeks since, but two made their marks. Many of the leading men possess unusual refinement and education.

Charts of the Winds, Currents, Etc.

A series of charts has just been published by Lieut. M. F. Maury, superintendant of the national observatory, prepared by authority of Commodore Warrington, chief of the naval bureau of construction, designed to show the force and direction of the winds and currents of the North Atlantic Ocean. Accompanying these charts there is an abstract log, designed for shipmasters, in which they can enter their daily run, currents, thermometrical observations, &c. The charts will be given to shipmasters who are willing to keep the above log, and forward it to Washington, on their return. The object is, by a succession of observations under different circumstances, and at different seasons, to verify the currents of wind and water known to exist in and over the Atlantic, and which, when verified, will, it is obvious, afford some new guide, as to the course which vessels should steer at particular seasons.

Copies of these charts and the abstract log have been left with the different collectors, and will be furnished to such masters of vessels as are willing to aid the praiseworthy object for which this enterprise was undertaken.

Frederick the Great and Zimmerman.

Dr. Zimmerman the author and physican of celebrity, known by his works on Solitude and National pride, went from Hanover to attend Frederick the Great in his last illness. One day, the King said to him, "you have, I presume, helped many a man into the other world?" This was rather a bitter pill for the doctor; but the dose he gave the King in return was a judicious mixture of truth and flattery—"Not so many as your majesty, nor with so much honor to myself."

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New Inventions.

New Paddle Wheel.

Mr. R. L. Curry, of Philadelphia, has patented a paddle wheel, the improvement of which is said to consist in affixing sub-paddles to those now in use, fastened to the arm of the wheel, and in casing the sides of the wheel from the under to the lower extremity of the paddle, extending around the circle of the wheel. By experiment, it is said, the gain in resistance is 16 per cent, while the gain in speed is 20 per cent. The first experiment by the inventor, was made upon the Delaware River last summer, by affixing the improvement to the steamer Portsmouth. The usual speed of the boat was from 10 to 12 miles an hour; but upon the attachment of the improvement the boat attained a speed of fifteen miles an hour.

Clover Thrasher and Seed Cleaner.

Mr. Robert McGowan of Jersey Shore, Lycoming county, Pennsylvania, has invented a machine for thrashing and cleaning clover seed, it has been pronounced by all the farmers in that district of county, who have witnessed its operations to be the most complete machine for that purpose which they have ever seen. It thrashes and cleans completely from twenty-five to thirty bushels per day. The thrashing and separating is done at one operation and the concave and cylinder with screws are used, in the thrasher, so also is the common fan in separating. Mr. McGowan has arranged and combined different parts of Grain machines in a different manner from any in use, and although the separate parts in themselves are not different, yet as a whole it is different in combination and apparently perfect in its arrangement.

New Musical Instrument.

Messrs. Thomas D. Paine and Co., of Woonsocket, R. I., have lately invented a musical instrument to which they have given the old name of Tuba. It is constructed entirely of brass, and is of the horn species. The invention consists, particularly, in valves so made and arranged as to produce the greatest variety in quality and quantity of tone, with the least effort, of any instrument heretofore in use. It is of very large size: and its compass is, in deep base, an octave below the Ophiclyde—from double G, flat to four octaves above.

Measures have been taken to secure a patent.

New Car for Curves.

Messrs. Morse & Mansfield, machinists, at South Canton, Mass., have invented a new car which has been represented to us as being a most valuable improvement. We have not yet seen the model, but from what we have heard, curves will be surmounted by it in a very easy manner. The primary cost is somewhat more than those now in use, but the ultimate expense will not, as there will be a great saving of tear and wear taking all things into consideration, and roads may be made with any amount of curves so as to save deep cuts, or avoid other impediments and costs in constructing straight railroads.

Improvement in Dyeing.

We see it stated in some of our exchanges that a dyer in Greenville, R. I., has discovered a new mode of dyeing blue without indigo and as fast.

Six years ago William Macfarlane, chemist in Glasgow, Scotland, discovered a method of making the royal blue a permanent color, and his system is now well known to many in the United States.

New Rolling Machine.

A. B. Crane, of Worcester, Mass. has completed a new and improved machine for rolling silver metal for spoons and for other purposes.

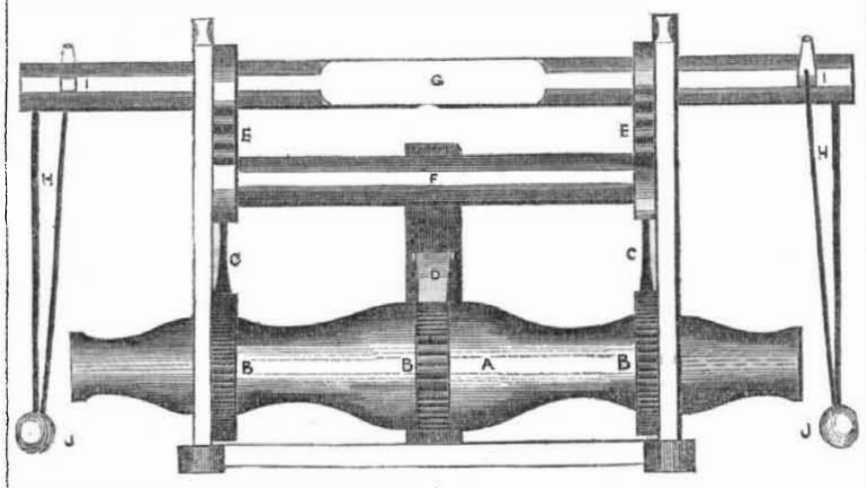
New Railroad Car Brake.

Mr. Charles Clinton of Middletown, Orange Co., N, Y., has ivented a new car brake, for which he has taken measures to secure a patent. It is self-acting, and stops the car instantly, if the locomotive should be run off the track.

Bullet-Proof Coat.

A firm in Enniskillen, Ireland, has completed a ball-proof coat, which is so hard as to be impenetrable by bullets fired from a pistol, gun or blunderbuss, and so flexible as to be worn with the greatest ease by men, riding, driving, or walking.

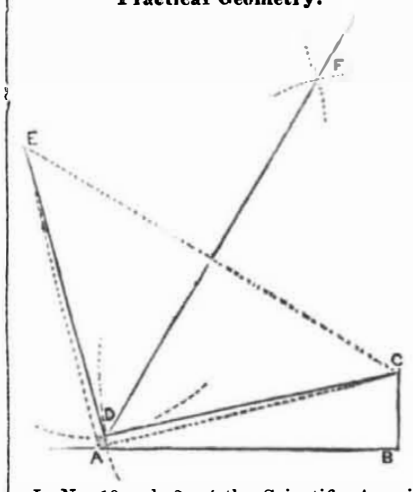
OSCILLATING W INDLASS.



This windlass is the invention of Mr. E. Hallock, of Port Jefferson, Long Island, N. Y. It is considered to be a great improvement by numerous ship builders, who are the best judges of its merits, and Mr. Holcomb is a ship builder himself and therefore knows what advantages are to be gained and what difficulties to be overcome by his invention. The nature of the improvement consists in applying weighted levers to rocking shafts and combining these rocking shafts with catches to work into the racks of the windlass so that when the weighted levers are operated like pendulums, the windlass is made to revolve by the catches shifting and holding alternately.

Description.—A, is the windlass. B B B, are the racks on it. C C, are catches attached to eccentric cog cams, which are fixed upon a rocking shaft F. These cog cams have cogs upon their upper peripheries and deep grooves cut in their lower peripheries. The grooves in the lower peripheries are to allow the catches C, to accommodate themselves to the rock of the shaft F, in *holding* and *letting go* the catches of the windlass to revolve it. The cogs upon the upper peripheries mesh into similar cogs fixed on the main rocking shaft G. These cog cams are represented by E E, and on the lower cog cams are ears to which the piston rods of pumps can be attached and operated by the levers if required. The rocking shafts are fixed upon a common windlass frame made somewhat higher than those in use. These shafts work in bearings made in the common way to allow free motion. D, is a common pall fixed upon a standard and is in common use. J H, represents the weighted levers, of which there are two. This lever is simply a strong iron rod with a ball J, attached to one end of it and the other end fixed in the shaft, G, in such a manner as to describe a perpendicular line with the centre of the rocking shafts and windlass. There is an arm fixed upon each side of the main rocking shaft and connected with the weighted lever by a rod so as to form an angle to allow the rocking shaft to be worked by persons standing on opposite sides of the windlass, in the same manner that a common pump is operated. It is well known that manual power can be applied in this manner better than by any other mode, and the time lost by shifting handspikes after they have described an angle of 90 degrees as in the common windlass, is obviated, while the weights by continually seeking the centre of gravity assists in the operation materially, especially where great power is required in hauling up vessels. By having the materials strong enough and placing this windlass on a position where the levers could be made of great length and weight, it becomes a machine more powerful than the lever of Archimides which dashed the Roman's vessels to pieces These weighted levers are not new as applied to pumps, but as here combined with the cog cam wheels, catches, and windlass, we are not aware of any such previous combination for the same purpose, and for this the inventor has taken measures to secure a patent.

Practical Geometry.



In No. 10, vol. 2, of the Scientific American, was published a method for finding the bevel of any box of a pyramidal, or frustum of a pyramid shape. Wagon and carriage makers very frequuently have occasion to apply the rule in fitting a block into the corner of a box that is made on a bevel, add also in cutting the mitre for the ends of the side boards. Almost all mechanics obtain the desired bevel by trial. The above is an easy method to find it by draft.

Example.—I want to set my bevel square to dress the sides of the corner block for a box made on a bevel of 4 inches to the foot?

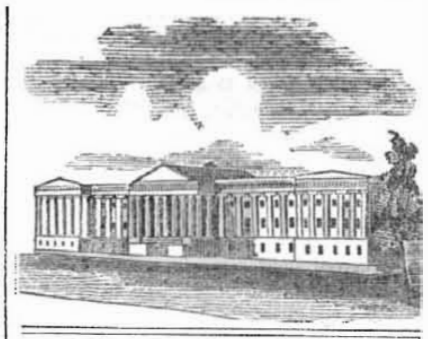
Draw A B=12, B C perpendicular to A B, and equal to 4; draw A C; from A draw A E at right angles to A C, and equal to it.—Then from E and C, with the distance A B, describe circles cutting each other in D, and E D C, will be the angle required. Bisect this angle and C D F or E D F, will be the angle for the mitre of the boards.

After the draft is made the triangle must be transferred to the edge of a board in order to set the bevel square. H. B. A.

A New Fabric.

Among the intelligence brought by the last steamer, is the following account of a new production, which has excited a great deal of interest.

"The owner of some spinning mills at Berlin has lately brought into the market a new species of flaxen thread which is extremely long and silky, white in color, and spun and dyed with extraordinary facility. This preliminary material which possesses even in a superior degree, all the qualities oi silk, is likely to compete with it from its simple and rapid fabrication, and from its price being very low as compared with that of silk. The appearance of this new fabric of commerce has caused a general sensation among the dealers at the fair of Leipsic and an Englishman has offered the inventor twenty thousand pounds for his secret, but this was refused, as the inventor intends to reserve to himself all the benefits of his discovery.



LIST OF PATENTS

ISSUED FROM THE UNITED STATES PATENT OFFICE,

For the week ending Feb 29, 1848.

To Robert Hillson, of Albany, N. Y., for improvement in Hot Air Furnaces. Patented Feb. 29, 1848.

To Joshua Woodworth, of Haverhill, N. H. for improvement in Seed Planting Machines. Patented Feb. 29, 1848.

To James Napier, of Shacklewell Lane, England, for improvement in the reduction of Copper Ores. Patented Feb. 29, 1848. English patent dated March 2, 1847.

To Elisha Barlow, of Marietta, Ohio, for improvement in Pumps. Patented Feb. 29, 1848.

To John Welsh, of Washington, D. C., for for improvement in Window Blind Fasteners, Patented Feb. 23, 1848.

INVENTOR'S CLAIMS.

Hot Air Furnaces.

By Walter Bryant, of Boston, Mass. "Improvement in Hot Air Furnaces." Patented September 25th, 1847. Claim.—What I claim as my invention and desire to have secured to me by Letters Patent is, the radiator constructed for the circulation of the smoke, &c. throughout its interior, and arranged for the removal of soot, &c. from the same, substantially as herein above described; and also, the combination of such a radiator with the smoke drum of the furnace, substantially as above set forth.

Cut-off Valves.

By Henry T. Peake, of Charleston, S. C. "Improvement in operating cut-off Valves." Patented 25th September, 1847. Claim: What I claim as my invention and desire to secure by Letters Patent is, the working of the cut-off valve with the same eccentric and arm as the slide valve.

Printing Woolens.

By George W. Wright, of New York City. "Design for Printing on Woolens." Patented 11th September, 1847. Claim.—What I claim as my invention is, this peculiar combination of the "barley-corn work" figures or others substantially the same into this arrangement of stripes to be printed upon fabrics separately or in combination with other figures, whether it is arranged to run lengthwise or breadth wise of the cloth.

Gas Regulators.

By Joseph Battin, of Philadelphia, Penn., Improvement in Gas Regulators. Patented 18th September, 1847. Claim—Having thus fully described the nature of my improvement in the manner of regulating the distribution of the gas from a gasometer, what I claim therein as new, and desire to secure by Letters Patent, is the manner herein set forth, of combining the conical governor or regulator, and the quicksilver seal, with the gasometer, so as entirely to cut off or to govern and regulate the pressure of the gas within the distributing pipes. I do not make claim to either of these devices when taken separately, and uncombined with the gasometer and inlet pipe; but I limit my claim exclusively to the aforesaid combination for the purpose herein fully made known.

Jones' Elastic Flyer and Wharve Coupling.

We have received a circular containing the engravings and a full description of Mr. Robert S. Jones's (Charlottesville, Va.) improvements in machinery for the cotton manufacture, models of which are in preparation and will be sent to machinists and manufacturers who will apply for them. Address the inventor.

We shall probably be able to give our readers an engraving of the improvement in a few weeks.

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NEW YORK, MARCH 11, 1848.

Resources of America.

The agricultural capacities of the United States are unlimited. Our Republic possesses every variety of soil and every variety of climate. The mineral and agricultural resources of any country constitute the basis of its wealth. With natural resources and an industrious and virtuous population any country will assuredly become great and rich. Judging from the history of the past, the Republic of the United States will be in 1948 the most gigantic, rich and powerful empire that ever existed.

At the present moment there is a sleepless and untiring energy displayed in every department of science, manufacture and agriculture. Railroads and Telegraphs are making an end of time and space as it regards intercourse Factories are springing up on every mountain side and in every valley. The lovely waterfalls of the North and the South that had sung their wild songs responsive only to the winds and the woods for centuries, are now waking the merrier music of the shuttle and the spindle to clothe our citizens with drapery more fine than that worn by ancient princes. The bosom of mother earth is pierced with a thousand mines and from her inexhaustible stores, treasures of metals, and what is more valuable still, a power unknown to the most mighty philosopher of old, is brought from thence, which in the shape of coal propels the steam engine and enables the steamboat to march over the billow by a breath of the very water she dashes from her bucket.

Agriculture is not neglected amid commercial, mining and manufacturing enterprise—in fact our agricultural enterprise is the root—the soul and body of all the other departments of our national prosperity. The cotton, sugar, hemp, wheat, corn, lumber and the numerous products of our endless variety of climate and soil create all our commerce and all our manufactures. The trade of town and country is just in proportion to the resources of the country as developed by an ingenious and industrious people. The reason why the United States has become the first agricultural nation in the world in the amount of her products, and the second in commercial prosperity, is because she possesses unlimited natural resources and a people capable of developing them by an industry that never tires and an ingenuity as soaring as the eagle that rides on the sunbeam and sails on the cloud.

Copper.

Copper is a word derived from the Island of Cypress, where it was first wrought by the Greeks. To obtain it pure when extreme pureness is required, is to dissolve common copper in nitric acid, then dilute the solution, introduce a piece of iron and the pure metal will be precipitated, when if there be any particle of the iron left it can be removed by washing with weak sulphuric acid. These acids have a greater affinity for the iron than the copper, and this is the effect of that wonderful agent, electricity. Copper is negative and iron is positive. Copper was used and known by the ancients previous to the discovery of malleable iron. The weapons of the ancients were sometimes of a very fine temper and very hard, but they were made of alloys which in different component parts were called bronze. From the negative nature of copper, a correspondent of the Philadelphia Ledger recommends its general use for steam boilers and suggests the coating of iron boilers inside with copper. This can be done by filling the iron boiler with the sulphate of copper and depositing the copper on the iron by the agency of the galvanic battery. It is a good suggestion and we may yet live to see it in universal practice. At present copper is used for an endless variety of purposes. It is used as a medium of exchange in coin. It is used in the art of dyeing for browns and blacks; it is used in medicine and the mechanic arts for kettles and boilers, but especially as an alloy; it is valuable for the number of its mechanical mixtures, to which we shall direct attention in some future practical articles.

Expansive Steam.

A knowledge of the advantages of working steam expansively, although understood by all engineers, yet may not be uninteresting to many others, especially when made plain—a thing which too many abstruse geniuses never fail to make a wonder of, where ne'er a wonder should be. When steam is used from the boiler, say at 30 lbs. to the square inch, for each foot, and throughout the entire stroke, which is 10 feet, we shall have a total amount of power, 30 lbs. multiplied by 10 feet=300 lbs., which if we take 10 lbs. of coal to generate that amount of steam power, then we have 300 lbs. divided by 10 lbs coal, showing that 1 lb. of coal gave 30 lbs. of power. Now suppose the steam from the boiler was the same as before, and being admitted in the same cylinder, but was cut off when the piston had gone only 6 feet, then the 30 lbs. for 6 feet of the stroke would be 180; now by taking the 180 lbs. as a constant number, we divide it by 7, the 7th foot of the stroke of the piston, we have as the expansive force of the steam—

Different feet strokes.

10, 9, 8, 7)180=25 5
8)180=22.4
9)180=20.
10)180=18.
Add for 6 feet of stroke 180.

Pounds steam, 265.9

In other words, by cutting off the steam at three-fifths of the stroke there is a whole power of 265.9 lbs. of steam at the expense of 6 lbs. of coal, or a loss of only 34.1 lbs. of steam for a gain of 4 lbs. of coal—nearly one third—a gain for every pound of coal of 14.3 lbs of steam, as follows :—

Full stroke, : : 10)300. =30.
Cut-off and expansion, 6)265 9=44 3

Minus full stroke, : 14.3 lbs.
O gain cut-off, : 14.3 lbs.

A saving of 16.4 per cent of fuel but not, as some have wrongly expressed it, "a gain of power in the stroke."

Usefulness as belonging to Invention.

The eighth section of the Constitution of the United States authorises Congress—

"To promote the progress of science and of the *useful arts* by securing for limited times to authors and inventors the exclusive rights to their respective writings and discoveries."

The sixth section of the Patent Law of 1836 intended to carry out this Constitutional power designates as proper claimants of Patents—

"Any persons having discovered or invented any *new and useful* art, machine, manufacture or composition of matter, or any new and useful improvement, on any art, machine, manufacture or composition of matter not known or used by others before his or their discovery or invention thereof, and not at the time of his application for a patent in public use or on sale with his consent or allowance as the inventor or discoverer."

The Act of 1842 authorises the issuing of patent rights for 7 years, and at half the fee prescribed for others cases for new and original designs for manufacturing or printing,—for new and original designs for busts, statues, bas reliefs or compositions,—for new and original impressions or ornaments to be placed on any article of manufacture,—for new and useful patterns, prints or pictures for any article of manufacture,—or new and original shape of any article of manufacture."

Direct utility then in connection with novelty is requisite in respect to so large a class of applications for patents, that it is important to ascertain the true meaning, scope and operation of the term "*useful*" as employed in the above cited portion of our Constitution and Laws.

What is the "legislative" construction given to the term "useful" as employed in the Patent Laws?

The two Acts to which we have referred should be considered in connection,—and the meaning of Congress deduced from their provisions taken as a whole.

An examination of the act of 1842 shows that Congress intended to protect not only those inventions which are useful in satisfying our physical wants, and in promoting the safety and prosperity of individuals and communities. The Act in question spreads its fostering wing so widely as to protect inventions which minister to the innocent pleasures of taste and imagination,—and which are fitted only to impart pleasure.

Every new invention which if rightly used, enhances human happiness without necessarily injuring morals,—whether the invention relates to a plough or a piano,—seems to be within the protection of our laws.

The liability to be abused, furnishes no valid objection to patenting an invention provided the invention be useful for any purposes. For what may not be perverted to wrong ends? The percussion cap so useful to the sportsman, may also be used by the assassin. In short, Congress seems to have construed the word "useful" in its broadest and most liberal sense. They regard it as synonimous with "convenient," "profitable," "conducive to any innocent purpose," "beneficial."

"It has been a point of some difficulty and discussion," says Chancellor Kent, "to determine to what extent an invention must be useful to render it the subject of a patent. This will as a matter of fact depend upon the circumstances of each case. It must be to a certain degree beneficial to the community and not injurious, or frivolous or insignificant."—[2 Kent's Commentaries, p. 369.

"All that the law requires," says Judge Story, in the case of Lowell vs. Lewis—1 Mason's Reports, p. 182—"is that the invention should not be frivolous, or injurious to the well being, good policy, or sound morals of society. * * * It is enough that it be useful. How useful, is immaterial."

A patented invention is deemed useful if it be not frivolous. The want of utility is a good cause for not *granting* a patent. But it is very doubtful whether such want of utility furnishes any ground of defence whatever to a party sued for infringing upon the rights of the patentee. If A. has manufactured an article patented by B,—he would seem to be precluded from saying that the article was worthless. If worthless or pernicious, why did he manufacture it? The plea of A. would conflict with his acts.—[Sec. 1 Peters' Circuit Court Reports, p. 403. *

Percussion Powder.

To the Editor of the Sci. American.

As you did not allude to any use having ever been made of Pulvis Fulminus, I supposed you would be interested in the contents of the annexed communication. I have had much to do with that article, and when I met my last disaster, it had become appreciated by a great number of hunters and sportsmen, and but for the introduction of Percussion would at this time be in universal use. I made a prodigious improvement in proportions and manner of uniting the materials. By previously mixing together the nitre and carbonate of potash I obtained an intimacy of union, never to be had by grinding. By the old process, given in your paper, it had only 3 to 3 1-4 times the speed in burning over gunpowder, by my improved process 8½ times, which was prettily proved by a little implement, as follows :

A A, two little 3 inch cannons screwed into a standard graduated to 100. Holes were drilled so as to connect them to one another.—They were loaded with yellow powder and had a priming hole at the angle. Black powder is laid from B to C, and yellow from D to B. A slight side train was laid of yellow powder which on being fired at B, set both trains at the same instant when both pistols made but one report. The result was uniform and satisfactory. Although a rifle, well loaded, and fired by percussion, is discharged in a short time, yet I think I have never seen it done so suddenly as with yellow powder, when used, both as load and charge, in an open pan lock. And when a little care is taken to prick in yellow priming through to a charge of gunpowder it will set the gun off as quick as percussion. Although 8½ times quicker than gunpowder, it has no more than two-thirds its strength. Respectfully yours,

SAMUEL GUTHRIE.

Sackett's Harbor, N. Y.

Jethro Wood's Plough Patent.

The Legislature of this State has unanimously passed a resolution asking Congress not to renew this patent. This comes of waking up our law makers to the interests of the whole people. We have been informed that some of Wood's relatives were in Washington lobbying for the renewal. We suppose that they were there only in the capacity of stool pigeons. The net, however, is not yet closed and speculators we hope will be deprived of the pleasure of growing fat on the inventions of others, especially those that slumber in the tomb.

Pearl Fishing.

A company is about to be formed in this city to operate on the coast of Cumana, under the lee of the island of Margarita, in 10° N. latitude. The pearl-beds are pronounced invaluable by Humboldt, the celebrated traveller, but through the disturbed condition of the South American States, and their separation from Old Spain, they have been undisturbed for about two hundred years.

A company for Mackerel Fishing would be of infinitely more advantage to the country than for pearl fishing. Gold and silver are valuable in the arts, but we would like to know what benefit is to be derived from an oyster excresence.

A Rara Avis.

Rev. Mr. Kendall, of Verona, New York where he has a salary of $400, has lately received a call from the Spring street Church in this city, with a salary of $1500, and although very earnestly pressed to accept the city pulpit, he has declined absolutely.

Modesty.

Our *young* friend of the Farmer and Mechanic has become very modest in his obligations. We had no idea of seeing our Metallic Bath Table stuck under the nose of his *Mechantcs' Note Book*, after being prepared for us with great care and at some expense. It is an exceedingly amiable trait of character to wear unblushing other people's honors, and such a trait of character the Farmer and Mechanic is bound to carve out for itself.

Evil Speaking.

Whenever we hear a man speak disparagingly of his neighbors and take every opportunity to wound their feelings, we consider that man as yet in "the gall of bitterness and in the bonds of iniquity."

There is not a single drunkard in the village of Boonton, N. J., comprising eight hundred inhabitants, nor a tavern where people obtain intoxicating drinks.

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For the Scientific American.

Steam Boiler Explosions.

The subject of steam boiler explosions is one that has for a long time interested me, but more particularly of late, since my having had an occular demonstration of the importance of something being done to insure greater security in travelling. A person to be impressed with the importance of the subject, needs to be an eye witness to a scene similar to the one witnessed on the A. N. Johnson, which of itself appears to me to be sufficient to arouse the public en masse, to the importance of early action in the matter. But the A. N. Johnson is only one of the many cases that have occurred within the last four months. Our Western waters have been the scenes of almost perpetual accident and distress resulting from steam boat explosions, and yet the mass of the community seem apparently indifferent and secure. Steam boat proprietors take no measures to prevent these calamities. I have watched with a great degree of anxiety the proceedings of this Congress, hoping that something might be done to prevent the recurrence of such awful disasters as have been chronicled in our history the past few months While I am gratified to find that even slight measures have been taken of late for its accomplishment, yet I can but feel very much chagrined to see so much indifference manifested on this and like important subjects while matters of infinitely less importance are viewed with more enthusiasm than the subject demands. In reading your paper of Feb. 19, as I do every week with no small degree of pleasure and interest, I find you have examined the report of a Committee appointed by Congress in 1844, to investigate the cause of steam boat explosions, and devising the best means of aiding the Engineer in the discharge of his duty ; and farther, that the result of their deliberations placed the invention of Mr. Barnum of this city, upon the ground of superiority to any presented to them for examination. The interest that I have felt in steam boat explosions, induced me to obtain the report referred to, and was very much surprised to find that such investigation had been instituted and such results obtained by Congress in 1844, and so little done for the adoption of said invention. It appears almost criminal. Ought there not to be some measures taken to secure to steamboats an apparatus which displace the possibility of explosions, from deficiency of water, (which I consider to be the true cause of explosions.) It would be very interesting to me, as I suppose it would to the rest of your subscribers, to know what disposition was made of the Water Witch after the failure of her engines, and whether Mr. Barnum's apparatus has been applied to any other vessel, and whether you know of *any* measures being taking by Congress for the adoption of any invention to prevent explosions.

In conclusion permit me to remark, that I consider it highly commendable in the "Scientific American" to have pursued the subject with that vigor and energy which is calculated to seek out the cause of these disastrous occurrences and, if possible, remedy the EVIL. H. Z. D., Engineer.

New York.

Rigging of Vessels.

The bowsprit should be long and strong ; jib boom the same ; flying jibboom in a separate piece, as in many places it is required by law to be rigged in ; too short bowsprits and jibbooms are common, and generally too much steve is given to them. Thus jibs which are lifting and driving sails, are too small ; 2½ to 3 inches steve to foot, is enough for a vessel with a good body below forward, to keep her from pitching badly. Fore and mainmasts should be the same diameter, and foremasts only 3 or 4 feet shorter than the mainmast—that is, enough to keep the yards from locking. All masts above lower masts, and all yards on fore and mainmast, to be of the same length, so that the sails may be easily shifted. Masts should be stout and strong, so rigging may be light and slack. American vessels often beat in sailing, on account of stout masts, and light slack rigging, giving the masts some play. Many foreign vessels have light spars overloaded with rigging, and tied up by it, so masts have no play. Long lower masts, as long courses, drive well ; all canvass drives better in one piece than in two ; topmasts a trifle short in proportion, as topsails are particularly storm sails ; topgallant masts and yards long, for India or South American passages, for which studding sails and stay sails should be large and plenty ; a large topgallant sail is rarely objectionable, and may often be set to advantage in lulls during squally weather, over single reefed topsails ; topgallant backstays, spread by whiskers from topmast cross-trees, enable topgallant sails to be carried long along lower and topsail yards, to spread as much low sail as possible ; storm stay sails and storm spencers are good sails. Long mast heads give strength, and long yard arms look well, and support studding sail booms. Masts should never rake less than one inch to a foot, and never more than 1 3-4 inches. All masts should rake alike ; if there must be a difference we prefer the foremast to rake most, as, on the wind, the rake to foremast does good in lifting the vessel over the head sea, and the rake to the mainmast then has little effect.—Before the wind, the mainmast does most good and then the rake, being more than ½ inch to foot is an injury, particularly in light winds, when sails are apt to flap in to the mast and throw the wind out of them ; and great rake to masts are always an objection in very light winds. Topmasts, &c., should rake the same as lower masts. A hermaphrodite brig rig appears to be fastest and best on the average.

Chloroform and its Discoverer.

The following account of the discovery of Chloroform in this country, was received from Samuel Guthrie, Esq , of Sackett's Harbor, N. Y.

In making experiments, some eighteen years ago, with chlorine and alcohol, I obtained a new product. having the properties of the chlorine of ether of the Dutch chemists, with which I supposed it to be Identical. As I first obtained it, it was in solution in alcohol. In consequence of its pleasant flavor, and the delightful sensation it produced when taken into the stomach, it was greatly sought for in my neighborhood as an exhilarating drink. After seeing its effects in producing a higher degree of jollification and mirth, than I had ever seen from intoxicating drinks, and finding that I was introducing a dangerous auxilliary to the cause of intemperance, I refused peremptorily ever to sell another drop to be used as an exciting beverage.

From seeing its surprising powers in restoring a daughter, nearly dead from the effects of burning charcoal in a close room, and other known qualities, I thought it might prove of much value in Asiatic cholera, and while that disease was traversing this continent, I sent it into Canada, New York, New Haven, &c., in the hope that it might be tested in that frightful disease.

When first I obtained it, it was in solution in alcohol, and my first object was to separate it from all foreign matters and to present it in a state of absolute purity. This I effected on the 6th of January, 1832, by concentrating it to a specific gravity of 9.486. An account of the discovery and improvements in constructing it, up to that time, was published in the American Journal of Science and Art, by Prof. Silliman.

It was important to find a more simple mode of concentration than any I had used, and finding it was very sparingly soluble in water, I concluded that low proof spirits be used instead of alcohol in generating it, and that the product might be washed freely with water and thus freed from alcohol. The trial was made and resulted in complete success.

To give an idea how easily and rapidly chloroform may be made, and of great purity and strength, I will detail one operation made in 1832, from which course I have never since had occasion to deviate.

Into a 500 gallon copper still I poured 100 gallons of common whiskey, and then plunged in 240 pounds of chloride of lime. The still became instantly hot, and before I had luted on the head, I had a full steam of chloroform from the still worm. It continued to run freely for some time without fuel. When the product ceased to come over sweet I removed the receiver and ran off the remainder of the spirit for future use. The product was re-distilled from a profusion of water, or was well washed in some five or six waters, when it had reached a specific gravity of 9.486. From 240 lbs. of ordinary chloride of lime, I obtained nearly 100 pounds of chloroform.

Fine Stockings.

In 1756, the magistrates of Aberdeen, Scotland, famous for its manufacture of worsted stockings, desirous of expressing the esteem which they bore to their countryman, Marshal Keith, resolved to present him a pair of stockings of uncommon fineness. The stockings were made of the Highland wool, and were valued at five guineas the pair—and were easily drawn together through an ordinary thumb ring, although they were of the largest size. These stockings were sent in a box of curious workmanship, to Marshal Keith, who deemed them worthy the acceptance of the Empress of Russia, to whom he presented them. In the year 1710 worsted stockings were made from Highland wool, valued at thirty shillings a pair, and sometimes for three pounds sterling ($15) a pair. In 1733 similar stockings were sold in Aberdeen for $27 50 a pair, and the Highland wool has been spun to the extent of more than sixty thousand yards, (about 34 miles) from one pound. Three pairs of gloves made from this yarn were bought by Lady Mary Drummond, one of the Duke of Perth's family, at three guineas a pair.

The wool that made such fine articles was introduced into Scotland from Spain, and Spanish shepherds with their plumes and narrow crowned hats, attended by their huge dogs, came over with their Spanish flocks and were subjects of much wonderment to the Scottish people. Both these men and their dogs faded away before the superior energy of the Highland shepherds and the restless activity of their small sheep dogs (colies.)

Americanisms in London.

A London correspondent of the New Haven Register, in describing the novelty of the place, states that "it is no uncommon thing to see posted in the streets—"American cheese, lard," &c. "American empty flour barrels,"—Corn bread, with the corn stalks sticking out of the window, to show that it is real Simon Pure. Also, "American boots," or boots made on the American plan, and "American overshoes," and "American clocks," and last, though, not least, "Baby-Jumpers" These have, as yet, created the greatest sensation of any thing from the land of steady habits. They have been approved by the physicians and the press.—Even the Times newspaper—the thunderer, as it is called—thinks them a very useful article; and Tuttle, the inventor, is acknowledged by all to be the great lion of the city. His extensive store in the Strand is crowded by his numerous customers, and the street and side-walk in front are blocked up by the curious gazers of all nations. It is said he is to be appointed "baby-jumper" manufacturer to her Majesty, the Queen—who has been graciously pleased to accept as a present the beautiful Jumper exhibited at the Fair of the American Institute, and is in raptures at the delightful recreation it affords the little members of her household. Surely this is a wonderful era in the history of our country when a single Yankee can set a whole nation, princesses and all, to jumping—it should be honor enough for any one man.

Circus Spectacles.

Van Amburg, the lion tamer, has been sent over by Mr. Titus to England, to purchase arena horses and engage arena talent. He has purchased a number of spotted chargers from Mr. Batty, of London, and the very horses that have been foremost in the charge on the British side, in the grand spectacle of "the Battle of Waterloo," will shortly be engaged with equal energy under the "star spangled banner," in bearing down Mexican mustangs in the glorious battle piece, entitled "The Battle of Mexico." Mr. Van Amburg has also purchased two of Mr. Batty's three elephants, for £1000 each, and the whole of the beautiful camels, with their splendid eastern trappings.

An enterprising Yankee, now in Russia, has obtained the exclusive privilege of cutting ice from the Neva, for foreign markets.

Ancient Astronomy.

The honor of priority in observing the celestial sphere had been claimed for the ancient Hindoos, the Chinese, and the Egyptians and to the two former, a knowledge of its mechanism at a very distant period had very properly been assigned. The preponderance of evidence, however, was in favor of the Chaldeans, The Hindoo tables showed a date of upwards of 3,000 years before Christ; but from modern calculations based upon their theory, some doubts had been entertained as to its accuracy.

In Egypt, attention to the celestial phenomena commenced with the era of its early inhabitants. The exactness with which some of the pyramids were made to face the four cardinal points had given rise to the supposition that they were designed for astronomical uses. And authorities might be cited to prove that they terminated at the top in a platform which the priests occupied as an observatory of the heavens. But it the Greek philosopher taught his pupils how to find the height of a pyramid by its shadow, (one of the most simple examples of practical geometry,) no very high estimate could be formed of the accomplishments of the Egyptians. In Fact, Ptolemy, who lived in the country, and might be presumed to have been acquainted with its records, derived none of his materials from that source, but only quoted the observations of the Chaldeans.

The age of astronomy in Greece commenced in the seventh century previous to our era, but, in the writings of the oldest poets, Hesiod and Homer, some centuries earlier, passages occurred which proved that the appearance of stars and groups of stars,, had been carefully noted. Hesiod mentions that the Pleiades were invisible for forty days, and also that when they rose from the dark rolling sea, sailing was dangerous.

Thales, the Milesian, was the founder of the Ionic school, to him were the Greeks indebted for the proficiency they attained in astronomical science ; for, as a people, they were never distinguished for their study of physical nature. It was on record, though without much foundation in truth, that Thales when a boy, fell into a ditch, whilst contemplating the stars, upon which his conductress exclaimed, "Why, O Thales, do you seek to comprehend the things which are in the heavens, when you are not able to see those on the earth?" Had Thales been discouraged and relinquished the soul-absorbing study of astronomy, what the world at large, would have lost by it, is a question, which we would leave for reflection; but, surely, it would make us pause, ere we condemned those, who, in seeking for discoveries in the intermediate paths of science, at times appeared blind to passing objects and events.

Passing over the names of some of the successors of Thales we arrived in about two centuries to that of Pythagoras, who, appeared to have reached the sublime conception of the earth's motion round the sun. The Pythagoreans taught, that not only the planets, but the comets themselves, moved round the sun. But these views of the science, though not universally received by all enlightened minds, met with nothing but discredit and ridicule, because they were opposed to the evidences, and it appeared that so strong was the party of those clever sticklers for "the evidence of the senses," that for 1800 years they had their own way.

Early in this period of opposition to the Pythagorean system, Egypt became the chief seat of astronomical science. The first of the Ptolemies laid the foundation of the celebrated library at Alexandria, perhaps the most extensive collection of books ever brought together, before the art of printing was known. His successor established in connexion with it, a college for the cultivation of the pure sciences ; invited the Greeks to repair to it, supplied them with the best instruments of the times, necessary to their pursuits and thus arose the Alexandrian School, in which was learned those Greeks, who after the capture of Constantinople by the Turks, spread themselves over Europe and broke up the darkness of the middle ages.

Four steamboats were burned in Cincinnati on the 28th ult.

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Some Comfort to Inventors.

The Bill to increase the number of Patent Office Examiners, has at length passed through Congress, after meeting with some undeserved opposition. The Patent Office business is nine months in arrears of examination, a state in which it is to be hoped it will never be found again. Now for the extermination of business, and then we must rub hard for a Book of American Patents with the specifications.

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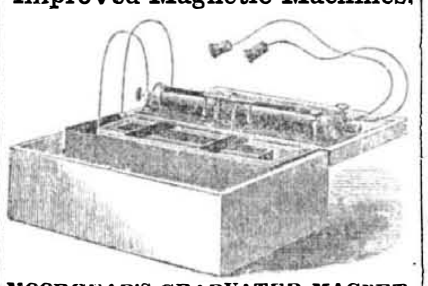

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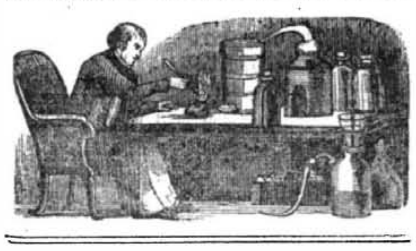


For the Scientific American.

The Magnet.

The peculiar power of some iron ores to attract and hold fast iron, was known in ancient times, even the days of Thales. It was not, however, until a much later period, that the discovery was made that these ores, or magnets, could like a charmer, impart their powers to the metal they attracted, thereby making artificial magnets. Pure cobalt and nickel have magnetic qualities, but they are weaker than iron. Minerals which are not metallic after having been exposed to the action of fire, are more or less attracted by the magnet and every part of animal and vegetable matter after combustion are attracted by the magnet, but no doubt owing to metals contained in the ashes. Natural and artificial magnets have two opposite points called magnets poles, and one of these poles points always to nearly the North and the other to nearly the South, if the magnet is poised freely to vibrate on the centre. One thing singular about the magnet is, that where two magnets are brought near together, the poles of the North when brought into contact repel each other and the South and North poles when brought together attract each other. If we observe single magnets carefully, we will find that the effects of attraction or repulsion takes place at short distances and diminishes in proportion between the square and the cube of the distance. There are some differences in this respect, owing to the form, size and other circumstances connected with the magnet. The magnet has no attraction for iron completely rusted, nor red hot iron and a white heat destroys the power of the magnet entirely. When pounded to powder, magnets also lose their virtue, but if a magnet in the shape of a bar be cut perpendicularly through its axis, even in a great number of pieces, each piece will be a magnet. If a sheet of iron is placed with its two surfaces turned to the poles of two magnets, their powers are much weakened, but if the poles of the magnets are applied to the opposite edges of the sheet of iron, then (the poles) attraction is increased. Exhaustion of air from the place where the magnet stands does not destroy its virtue. The strength of a small magnet is greater in proportion than a larger one. Very small magnets will sometimes support sixty times their own weight, while magnets that weigh two pounds will rarely support more than four times their weight, hence sixteen magnets of an ounce each will support more than one weighing one pound. If a weight to be supported by a magnet consists of all iron, a heavier weight will be lifted than if other weights are attached to the iron It is singular that the power of a magnet is increased by making additions to the weight it supports, while if it has no opportunity to exercise its strength in this manner on iron, like an enervated man it grows weaker by degrees. It is favorable to the power of a magnet to keep the north pole uppermost. The means of giving a magnet the greatest power is to arm it, thereby concentrating the power of both poles to which a piece of iron is applied. A natural magnet for this purpose is made smooth at the poles, and two pieces of soft iron to project on one side are applied to the magnet. These two pieces of iron becomes themselves magnetic and are held fast on the magnet by a brass or silver box. A piece of iron called a *lifter* and having a hook and scale for carrying a weight, furnishes a means for determining its power. Artificial magnets are armed in the same manner. The effect of arming a magnet is very great, one that would support only one grain in its unaided state, has been made to support five hundred grains. Magnetic power may be communicated from a magnet to another body by mere touching. Iron may be rendered permanently magnetic by proper magnets, natural or artificial. The effect takes place, particularly on bars of soft iron, placed for some time in the magnetic line—all that is required, is that the iron does not deviate at too great an angle from the line, hence iron bars which hang in the magnetic meridian horizontally, (such as iron balance beams) grow magnetic, also iron bars which in regions distant from the magnetic equator, are placed perpendicularly. In the northern hemisphere, the upper end becomes the south pole, the lower end the north pole. In the southern hemisphere the contrary takes place. The magnetic virtue is promoted by giving to the iron bars, a tremulous motion, by hammering or boring. Tongs and fire forks by being often heated and set to cool again in a nearly erect posture, have gained this magnetic property.

The way of communicating magnetic power to iron by rubbing it with a magnet, is the most common and most effectual. Steel sufficiently hard may be rendered permanently magnetic, while soft iron can never be made so. Take a steel bar eight inches long and half an inch wide and an eighth of an inch thick, put the north pole of a magnet in the middle of the bar and draw it to one end, return without touching the bar to the point where you began and draw again down to the end. Do this from ten to twenty times. This part of the bar is now the south pole, the other end the north pole. The artificial magnet is strengthened, if the other half is rubbed in the same way with the south pole of the natural magnet. This is the *singlestroke* process. Another way is called the *double stroke*, and is done by putting both poles of the magnet in the middle of the bar and to draw the magnet without changing the direction of the poles several times frome one end of the bar to the other taking away the magnet finally at the middle of the bar.

(*To be continued.*)

Weight of Metal.

To find the weight of wrought iron, ascertain the number of cubic inches in the piece, and multiply by 2.816, the weight of one cubic inch ; the product will be the weight in pounds.

To find the weight of cast iron, ascertain as above and multiply by 2.607.

To find the weight of copper, ascertain as above and multiply by 3.118 ; the product is the weight in pounds.

To find the weight of lead, ascertain as above, and multiply by 4.015 ; the product is the weight in pounds.

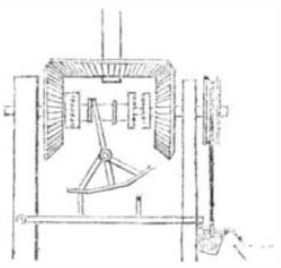
Planting Cotton.

J. J. Wadsworth, Esq. in writing to the Arkansas State Gazette, says in relation to an improved mode of getting an early and good crop, that he lives in latitude 35° N. and has felt the necessity of some plan for getting an early stand, and the following by experiment has proven to be the best for that latitude :—Have the cotton lands well cleaned, and about three or four weeks before the intended time for sowing seed, mark off the rows in width according to the strength of the soil, and turn four furrows nearly together with a turning plough, and at the time of sowing add a furrow of fresh dirt to each side of the previously formed bed, and then open a furrow on the bed, with a suitable plough, very shallow ; sow the seed and cover with a block two feet six inches long, twelve inches broad and eight inches thick, curved on one side so as to fit the bed and move the loose dirt from each side to the centre. The block must be attached to a stock made for the purpose ; the bawk may be ploughed out before working the cotton.—The object and advantage of preparing the beds previous to sowing seed, is that the bed may become firm and settled ; observation and trial will show that in a dry time the moisture will rise to the surface of settled beds sooner than it they were loose. When beds are fresh made and loose in a dry time, which often happens at that season, a loose bed will absorb, and the sun penetrates and dries the bed to the depth of the seed, which often remains there half swelled and sometimes dried and the result is a band stand of cotton.

If a slip of tinfoil be put on both of the eyes, and a piece of silver in the mouth by bringing these pieces in contact a faint flash will appear before the eyes.

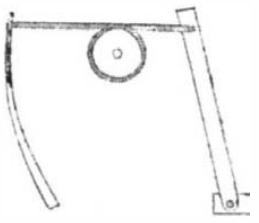
MECHANICAL MOVEMENTS.

Bevil Wheel Coupling.



Supposing the horizontal bevil above to run with uniform speed and the two other bevils to be loose on the horizontal shaft, to which the central coupling is connected by a rib or otherwise, either of the perpendicular bevils being connected to the shaft by means of the coupling, will revolve it, but in opposite directions. Connected to the coupling is a lever which alternately puts the coupling into geer with the opposite bevils as the bucket suspended from the pulley comes in contact and acts on the horizontal lever beneath.

Traverse Motion.



This is a modification of traverse and also of reciprocating motion. It is represented in the above cut by having the bar held to the wheel by a cord passing round its periphery connected with a flat spring. The wheel in this case is a fulcrum—a basis for the application of power.

Novel French Frigate, Destructive Weapons of War.

A French ship of war, the Psyche, at present stationed in the Tagus, is exciting the wonder of naval men. The Psyche is a smart frigate of forty guns, and though rated a 40 gun ship, she carries but thirty, but these are of tremendous weight : the 22 on the main being all 84 pounders, and the eight on the upper deck 32 pounders. These guns can be used indifferently for shell, round shot or grape ; but they are exclusively devoted in the Psyche for experiments on a concussion shell, which being a recent Gallic invention is exclusively employed in the French service. The shell in question has no fuse, and it is perfectly harmless until it passes a certain distance through the air, with a certain degree of velocity. It ignites by concussion, and not by percussion , and its chief destination and operation is that of lodging in the matter aimed at, and of setting fire to it, though it should pierce the object aimed at, it will produce the effect of an ordinary shell as it explodes. It is harmless, until it gains a certain velocity, and it may be rolled on the floor or dropped from the upper deck to the lower without the least injury, and even if it be broken in the fall no mischief will ensue. The shell was invented by Capt. Bilette of the French naval service, and it was actively used in 1844, at Mogador, with such terriffic certainty, that wherever it fell the town was instantly on fire. Persons in the habit of firing them say, that half a dozen lodging in a line of battle-ship or frigate, would set the ship in a blaze the moment they struck the side, as each burrows in the wood, tears up all about it, and ignites everything with which each morsel of the contents comes in contact. There are neither mortars nor howitzer on board the Psyche, all her guns are fitted in the ordinary manner, as the shell to be effective requires no more elevation of the gun from whence it is discharged than an ordinary round shot. The vast superiority of a frigate having her main-deck guns 84 pounders, and firing ten inch shells from each is evident, but the admirers of the Psyche will not rest there, as they assert that she is more than a match for a line of battle-ship. Capt Billette, the inventor of the shell died a few weeks since in the Naval Hospital at Paris. The secret of the new shell is only known to the proper department of the Government; the officers on board are unacquainted with it. All they know is, that such articles are served out with other munitions of war, and that, when they have witnessed the operation of the shell, the result has been invariably the same.

Sea Spray on the Hill-tops.

The height to which the foam of the sea is carried, during a hurricane is astonishing, we must, however, remember that the rotary motion of the blast would contribute in some measure towards this. It cannot be supposed that the gyrations act only on the surface of the water; they ascend following their rotary motion, and no doubt carry by gyration the sea-water in their course. During the severe gale which touched Tortola in 1831, I was residing with the late President Donovan, at St. Bard's, a hill, the summit of which is about 1000 feet above the sea, the dwelling house, however, is at an elevation of 920 feet. The day after the gale the leaves of the trees and plants in the garden, which had remained, became black from the contact with the sea-water spray, and the rain-water in the cistorn and vats which was to be used for domestic purposes was rendered brackish.—*Schomburgh's History of Barbadoes.*

Fill a saucer with water and let fall into it a piece of potassium of the size of a pepper corn, about two grains. The potassium will instantly become red hot with a slight explosion, and burn vividly on the surface of the water, darting at the same time from one side to the other with great violence, in the form of a red hot ball.

Melt four parts, by weight of Bismuth, two and a half of lead, and one and a half of tin, together in an iron ladle over a fire, so as to form one mass. If a piece of this metal be put into water it melts when the water begins to boil, and remains melted, as long as the water is kept boiling. This is an excellent composition for moulds for electrotyping.

Anthracite Coal.

It is reported that a new coal basin has recently been discovered in Rhode Island, from which the coal can be mined and delivered in Philadelphia at about three dollars per ton. The basin is supposed to be about twenty miles long, and five wide.

It is supposed that all the canals of Pennsylvania will be opened for navigation by the 15th of this month.

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